at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v19)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{18}$ $\qquad$ $\sqrt{44}$ $\qquad$ $\sqrt{50}$

$\sqrt{3 \cdot 3 \cdot 2}$ $\qquad$ $\sqrt{2 \cdot 2 \cdot 11}$ $\qquad$ $\sqrt{5 \cdot 5 \cdot 2}$

$3\sqrt{2}$ $\qquad$ $2\sqrt{11}$ $\qquad$ $5\sqrt{2}$

Question 2

Find all solutions to the equation below:

$$2\left((x-8)^2-8\right) = 56$$

First, divide both sides by 2.

$$(x-8)^2-8=28$$

Then, add 8 to both sides.

$$(x-8)^2=36$$

Undo the squaring. Remember the plus-minus symbol.

$$x-8=\pm 6$$

Add 8 to both sides.

$$x=8\pm 6$$

So the two solutions are $x=14$ and $x=2$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 8x = 84$$

Take the linear coefficient, 8, halve it and square the result. You should get 16. Add this to both sides of the equation to complete the square.

$$x^2 + 8x + 16 = 84 + 16$$

$$x^2 + 8x + 16 = 100$$

Factor the perfect-square trinomial.

$$(x + 4)^2 = 100$$

$$x + 4 = \pm 10$$

$$x = -4 \pm 10$$

$$x = 6 \quad \text{or} \quad x = -14$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 2x^2 - 24x + 69$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 - 12x) + 69$$

We want a perfect square. Halve -12 and square the result to get 36 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 - 12x + 36 - 36) + 69$$

Factor the perfect-square trinomial.

$$y = 2((x - 6)^2 - 36) + 69$$

Distribute the 2.

$$y = 2(x - 6)^2 - 72 + 69$$

Combine the constants to get **vertex form**:

$$y = 2(x - 6)^2 - 3$$

The vertex is at point $(6, -3)$.